

DOCUMENT RESUME

ED 437 911

IR 019 871

AUTHOR Treadwell, Mark
TITLE Educator's Guide to Searching the Internet. K-College.
ISBN ISBN-1-57517-164-3
PUB DATE 1999-00-00
NOTE 75p.
AVAILABLE FROM SkyLight Professional Development, 2626 S. Clearbrook Dr.,
Arlington Heights, IL 60005 (\$12.95). Tel: 847-290-6600;
Tel: 800-348-4474 (Toll Free); e-mail: info@skylightedu.com;
Web site: <http://www.skylightedu.com>.
PUB TYPE Books (010) -- Guides - Non-Classroom (055)
EDRS PRICE EDRS Price MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS *Access to Information; Computer Uses in Education;
Elementary Secondary Education; Evaluation Criteria;
*Information Retrieval; Information Technology; *Navigation
(Information Systems); Postsecondary Education; *Search
Strategies; Student Attitudes; Teacher Attitudes; *World
Wide Web
IDENTIFIERS *Educational Information; Search Engines; Technology Role;
*Web Sites

ABSTRACT

This guide to searching the Internet, designed for educators at all levels, begins with a section that discusses reasons for using new technologies. The second section is an introduction to the Internet that provides activities for determining if an Internet site meets its objective, the site's relevance to what is being taught, the educator's attitude and security in an online environment, and the educator's comfort level with technology; student attitudes toward technology and the role of information technology are also addressed. Accessing information is addressed in the next section, including information overload, gateways in education, the information gateway, managing the information, key problem-solving skills, semantic fields, Boolean searching, and directories and search engines. The fourth section suggests a World Wide Web tutorial on searching the Internet, followed by a section that presents criteria for evaluating a Web site. The final section lists educational Web sites in the following areas: art and the arts, language arts, health and physical education, information technology, foreign languages, mathematics, performance arts, science, social studies, and technology education. (MES)

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Educator's Guide to Searching the Internet

Mark Treadwell

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Arlington Heights, Illinois

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Educator's Guide to Searching the Internet

Published by SkyLight Professional Development
2626 S. Clearbrook Drive, Arlington Heights, IL 60005-5310
Phone 800-348-4474, 847-290-6600
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Book Designer: Bruce Leckie
Proofreader: Ann Wilson
Production Supervisor: Bob Crump
Production Assistant: Christina Georgi

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Printed in the United States of America.

ISBN 1-57517-164-3
LCCN 99-71126

First published in New Zealand in a slightly different version as
Searching the World Wide Web. © 1998 by Mark Treadwell.

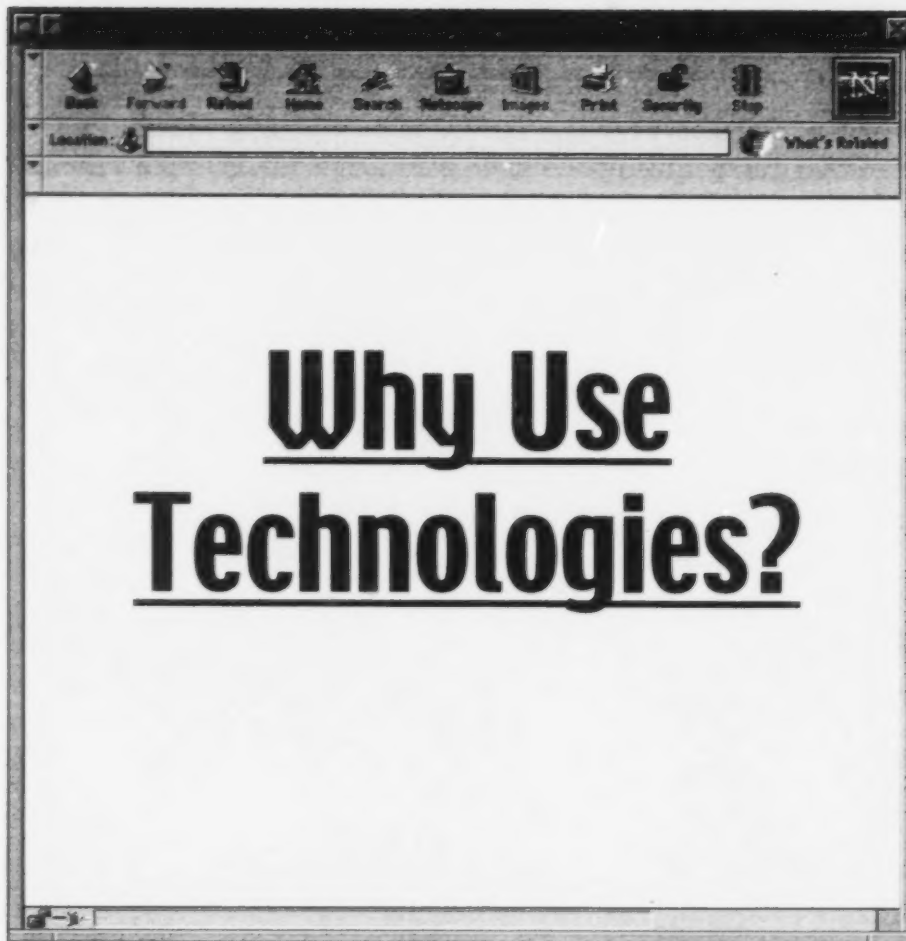
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The technologies we now have available open up vast opportunities to create a new education paradigm in which the expectations of the learners, the relationship between the educators and the educated, what is learned, and the expectations of all the stakeholders are radically challenged. There always remains the temptation to use the technologies to continue teaching what we have always taught and in the way we have always taught it. We must resist this temptation and develop a new vision for what education could be using the technologies that now are available.

This is a window of opportunity that has arisen due to the opening up of the information and communication conduits, potentially allowing anyone to be able to access any information in an interactive environment at little cost. The teacher as the information conduit is no longer a valid descriptor. The role of the teacher can now be expanded, and the type of education our students receive can be one primarily of engaged learning.

The role of the teacher is not singular, it is multifaceted. One of those facets will be the traditional standing in front of the students and lecturing as we have traditionally done. The technologies will not replace this role; they will augment it. Lecturing will not be our main role and we will not spend most of our time preparing information units, worksheets, and imparting information in a "broad band" manner. The technologies now allow us to simultaneously deliver information that is customized to the needs of each learner.

Gone are the days of broadcast education. We can now "narrow band" the delivery of education to meet the specific needs of the individual student. The technologies we now have available allow students to skip sections they understand, review sections they are unsure of, and receive targeted assistance where they need it.

It is for these reasons that when we look at technologies we must do so not from the point of view of how they deliver (technically speaking) but from the point of what they deliver. But to know what we want technologies to deliver, we must have a firm vision in our minds of what we believe our schools are here for.

In the past, educators have often viewed programs that focus on work-related skills as being for those of lesser ability. If this ever were the case, it is no longer so. Today's workplaces are far more demanding than they were in the past, and tomorrow's will be so, also. The community per se, not just the workplace,

requires individuals that can think critically, problem solve, demonstrate innovation and ingenuity, and access, synthesize, and analyze information. These are all higher-order thinking skills that we must encourage our students to develop if they are to cope successfully with the changing social, academic, and workplace landscapes. These skills are needed for the workplace, the "playplace," the "communityplace" and the "homeplace."

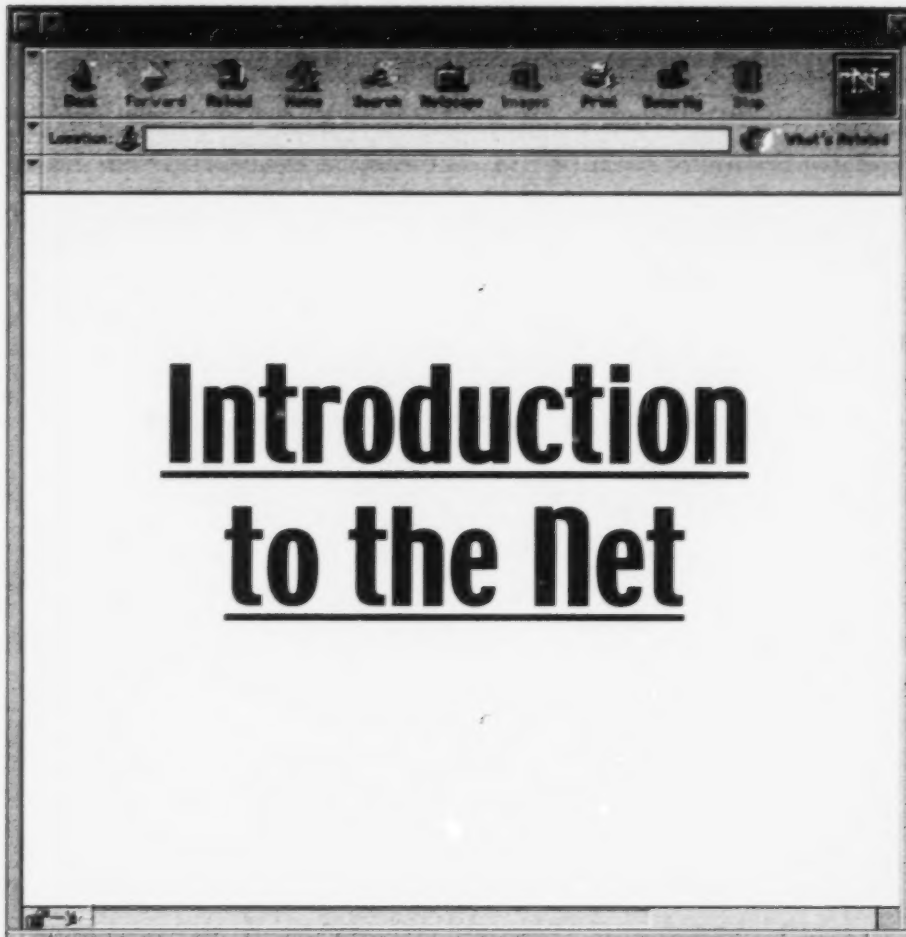
The greatest opportunity that the new technologies offer us is in the area of encouraging engaged learning. Following are some of the elements that can assist in providing an engaged learning environment:

- ☐ Student-led decision making, task selection, and assessment.
- ☐ Authentic, or real-world, activities and tasks.
- ☐ "Multimedia" activities and tasks that cater to a greater number of learning styles.
- ☐ Collaborative and group-based activities and tasks.
- ☐ Teachers as facilitators, modeling the types of attitudes to learning that they want their students to develop.
- ☐ Students as active participants in the learning process rather than passive spectators.
- ☐ Passing the discovery role on to the students and having them report back to both their peers and their teacher(s).
- ☐ Allowing multiple pathways toward the meeting of the predetermined and possibly negotiated objectives.
- ☐ Applying appropriate technologies whereby students are able to access, manipulate, and then present the information to appropriate audiences.

- ☐ The tasks presented must be attainable through the collaboration of the group and not necessarily by any one individual.
- ☐ Assessments must be *in situ* and relate to the objective of the unit or task being done. They must vary in what they assess and how they assess.

These new technologies allow access to vast amounts of quality information and instruction, and they also provide a new set of communication tools. These provide cost-effective and easy-to-use tools that allow students and teachers to communicate using text, graphics, voice, photos, animation, and video.

This booklet will provide you with the skills to search the World Wide Web effectively, finding appropriate sites for both students and yourself.



When boy used to meet girl, there was a risk associated with providing a possible friend-to-be with further contact details. What if he or she turned out to be a bit different or his or her mom turned up at the door? Now, teenagers exchange e-mail addresses and websites where they can learn more of each other from a distance—safely. If they want to take the relationship further, they can do so, but only if both parties are keen.

The desire for communication is what primarily drives our lives, but our lack of ability to communicate effectively will always mean we will struggle, always hoping our intended

message is transmitted as we had hoped via the communication media we engage. Whether communication is oral, written, or through the use of visual language, all of us have found ourselves at some point communicating a message we never intended and struggling to extricate ourselves from the embarrassment.

The Internet presents a whole new range of communication vehicles, with everything from e-mail, interactive MOOs (i.e., games), Internet telephones, video clips, web pages, and combinations of these. The success of e-mail as the most used of these new tools says a lot about our familiarity with communication in the written format. The possibilities of being misunderstood are minimized via this format and, hence, it is the tool of choice for communicating over the Internet. Our ability to communicate through the use of oral or visual elements is less well developed, and persons need only to flick through their last set of snapshots or ponder their resistance to use the phone for anything other than casual conversation to see that this is true.

As teachers, we have a responsibility to ensure that students can communicate successfully in all three styles—oral, written, and visual—and what is equally, if not more, important, students should be proficient not only at producing communications (i.e., writing, speaking, and creating) but also at interpreting (i.e., reading, listening, and viewing). These six areas are essential skill bases, and each curriculum area can serve as a vehicle toward their end.

The Internet provides a vehicle for the practice and a context for extending students' abilities in these areas. The future will demand a range of skills and talents from our present students and ourselves, and we have an obligation to adopt the new technologies, in balance with the technologies we have used successfully for so long.

Teachers everywhere are busy and struggle to fit in all their present obligations and are not always able to keep up with the rapid advances in communication technologies. Whether it is

Singapore, the United States, Australia, or New Zealand, teachers seem to be at the same point in the continuum . . . for now. Will this be the case in a year's time? Or will some countries have invested in the training of their teachers and ensured that their technologies and their training is user friendly enough for the uptake of these new tools to be successful?

School systems that set a priority on enhancing educational outcomes through applications of these new technologies will prepare their students for the future. These students will be empowered by these technologies to communicate better, to access information better, and to process that information such that they can create new knowledge. This knowledge will in turn empower their communities, leading to greater tolerance and understanding as well as greater economic independence.

The Internet and the tools of this trade require students to be collaborative, verbal, open, interactive, confident to experiment with new technologies, and good problem solvers. School is where students will get most of their instruction, and they will model much of their behavior on their teachers' approaches and attitudes. This requires a commitment from teachers that may seem unreasonable considering the workload many teachers already have, but that modeling is essential so that students can compete and cooperate successfully through the twenty-first century.

The ability to adapt and apply new technologies to new situations is an essential skill. With increasing numbers of workers running their own small businesses or acting as outsourcing agents, we must attempt to model the process of identifying appropriate technologies and then use them to increase the efficiency and quality of the educational outputs we see as important. To do this, we must understand our purpose and our mission and be clear as to the objectives we are attempting to satisfy.



ACTIVITY 1: WHAT IS IT REALLY ALL ABOUT?

Purpose: To determine if a site meets its objectives.

1. Locate each of the following websites by typing its Universal Resource Locator (URL), or web address, in the location bar at the top of the web browser on your computer.
2. Fill in the table by indicating the subject area the site would be useful for, its reading level, and whether the site provides information useful to teachers or students. Add comments on the site's use of graphics, that is, how much visual information the graphics communicate and how effectively they do this.

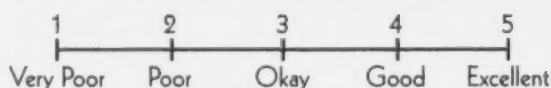
URL	SUBJECT	READING LEVEL	TEACHER SITE, STUDENT, OR BOTH	GRAPHICS RATING
http://fitlife.com/				
http://www.sikids.com/				
http://visembryo.ucsf.edu/				
http://www.eduweb.com/ amazon.html				
http://www.pbrc.hawaii.edu/ ~kunkel/wanted/mugs/				
http://www.cue.com/				
http://www.academic.org/				
http://www.crayon.net/				
http://www.svi.org/				
http://www2. plaguescape.com/				



ACTIVITY 2: IS THE SITE EFFECTIVE?

Purpose: To determine the site's relevance to what is being taught and whether the context(s) used are relevant or possibly outside the students' experiences.

1. Locate each of the following URLs using your web browser on your computer.
2. Complete the table by commenting on what you see as the teaching idea or principle behind each site. Also rate the site (out of 5; 5 being excellent and 1 being very poor), on the strength and validity of the context.



URL	TEACHING IDEA/PRINCIPLE	RATING
http://www.learner.org/exhibits/literature		
http://www.headbone.com/derby/		
http://www.eduweb.com/insideart/		
http://www.c3.lanl.gov:80/mega-math/		
http://www.cyberfilmschool.com/		

WHAT DO OUR STUDENTS THINK OF ALL THESE TECHNOLOGIES?

In a poll sponsored by CNN, the National Science Foundation, and USA Today, the Gallup Corporation (1997) surveyed 744 children in grades 7 through 12 to determine their familiarity with technology. The results:

- ☐ Virtually all teenagers (99%) say they have used a computer at some time in their lives.
- ☐ 82% of teens think strong computer skills and an understanding of technology will be essential for their future success.
- ☐ 80% indicate they use a computer on at least a weekly basis.
- ☐ 77% would prefer to conduct research for a school report by surfing the Internet, rather than using books and magazines.
- ☐ 71% rate their computer confidence at a level of "6" or better on a scale from zero to ten, where ten is very confident and zero is not confident at all.
- ☐ 67% say they have a computer at home.
- ☐ Roughly two-thirds consider space exploration, new advances in computers and advances in medical research to be exciting subjects they'd like to learn more about at school.
- ☐ 62% say they can usually figure out on their own how to operate a piece of electronic equipment or computer software rather than needing to ask for help.
- ☐ 59% would prefer to live in a house filled with high-tech equipment and appliances when they are adults rather than a "simpler" house.

- ☐ 58% would like to spend more time than they currently do using a computer.
- ☐ 55% have had the opportunity to use the Internet.
- ☐ 54% report that either they themselves or one of their siblings have the job of programming the VCR in their household, rather than a parent.

From *U.S. Teens and Technology: Gallup Poll/Executive Summary*. National Science & Technology Week Online. <<http://www.nsf.gov/od/lpa/nstw/teenov.htm>>. February 11, 1999. Information provided courtesy of the National Science Foundation.

The students seem to have the right attitudes and perceptions about technology, but unlike the marketing business, where perception is reality, in the educational technology business, reality is reality. Just because these students can use the technologies for their personal information use does not mean they can apply the same rules to their use in educational situations. If we continue, as we are at present, to throw technology after technology at our students without empowering them to use these tools as effective learning tools, then the attitudes and perceptions shown by a majority of the respondents to the Gallup Poll are unlikely to spill over into using the tools in the educational sphere of their lives.

THE ROLE OF INFORMATION TECHNOLOGY

To be effective in the school and classroom, technologies must meet three criteria if most teachers are going to be expected to use them.

- ☐ The technology must be very simple to use. Its operation must be mainly intuitive, and it must not require a 505-page manual just to get going.

- ☐ The technology must produce obvious educational outputs. A doctoral investigation should not be required; those outputs should be obvious.
- ☐ The technology must represent good value for the money. In return for the money it costs, it should produce measurable educational outcomes that are of greater value than if the money had been spent in other ways.



ACTIVITY 3: WHAT'S YOUR ATTITUDE?

Purpose: To find out how secure you feel in an online environment.

1. Rate your attitudes to each statement using the following scale.

SCALE	
1	I would not even consider it.
2	I would consider it if I was with someone who knew more than me.
3	I would do it if I knew I could undo it if it did not work.
4	I would take the risk but would worry about it.
5	What the heck, you only live once!

2. If possible, compare your answers with a fellow teacher's responses.

HOW KEEN WOULD YOU BE TO . . .	RATING
Send an e-mail to someone you do not know?	
Upgrade your web browser by downloading the new version?	
Sign up to a newsgroup or listserv?	
Order a product over the Internet using your credit card on a secure site?	
Join in with another class over the Internet on a collaborative project?	
Download from the Internet additional software needed to have the website run successfully?	

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ACTIVITY 4: WHAT'S YOUR COMFORT LEVEL?

Purpose: To assess how comfortable you feel using different technologies.

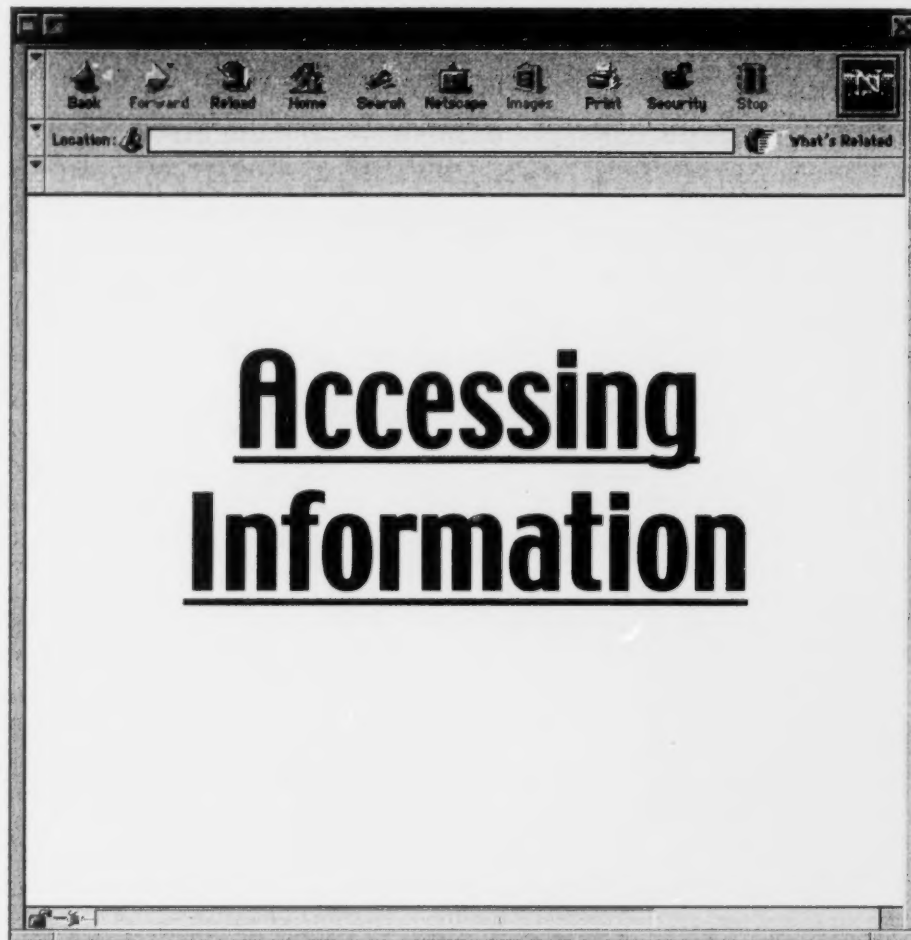
Consider the following statements with the understanding there would be no direct cost to you personally. Indicate your response to each statement, using the following scale.

SCALE

- 1 A complete waste of time
- 2 Probably not worth doing
- 3 Worth a go
- 4 Great, far easier

IF I WERE ASKED TO . . .	MY THOUGHTS WOULD BE
Keep a spreadsheet to record student grades	
Use the Internet to find out the weather forecast	
Use a mobile phone as a safety measure on a school outing	
Use the Internet to find and access a database of questions for use in a student assignment	
Use an electronic calendar rather than a book-based one	
Use a pay-for-service phone number to discuss an idea for a unit of work with an educational advisor	
Use the fax machine to send out a request for assistance with a special need child to a local teacher support group	

It is important to know your limitations and the risks you are willing to take and then work on these to extend your confidence. If you scored low, you may work best in a team or with a fellow teacher who is at a similar level. If you scored high, you may well have a role in assisting other staff members to try new ideas. Remember always that each person has a different level of risk taking and no matter where you rate, you have a definite role to play in your school's technological development.



INFORMATION OVERLOAD

As the amount of available information increased, the ability to know everything ceased many centuries ago. Throughout history, schools of all types have had to decide what information was critical for their students to know and what information was less necessary and less critical. Originally, this only meant missing some information, but today we are faced with teaching a tiny fraction of the enormous information pie.

There is no knowing what information the students in front of us will want or need during their lives. Rather than even hope to

be able to achieve this task, as educators, we have chosen to teach processes and skills as well as knowledge. These processes and skills have the potential to allow people to access and manipulate knowledge when they need it, as they need it, and in the form they need it.

Traditionally, this has meant teaching students to read and communicate effectively using books, paper, and pens, but during the last twenty years, the variety of communication media has exploded. Today, vast amounts of information are available in numerous forms, and this information is seeping into our homes in new formats such as computer software databases, CD-ROMs, cable and satellite television, direct satellite services, radio, television, teletext, the World Wide Web, newsgroups, listservs, e-mail, audio- and videoconferencing, streaming radio/video (RealAudio/Video), libraries, newspapers, mail, phone, fax, the list goes on.

GATEWAYS IN EDUCATION

The direction education is moving is symbolized by the diagram shown in figure 1. The diagram shows a core of knowledge surrounded by a set of skills and processes that can be used to access additional knowledge when necessary. This knowledge and these skills and processes are influenced by the social environment we live in.

But the concept of teaching skills and processes so that students can access knowledge and information when and where they need it and in an appropriate form is only possible when two mechanisms are in place. These are the two gateways that allow movement between the different elements of the diagram.

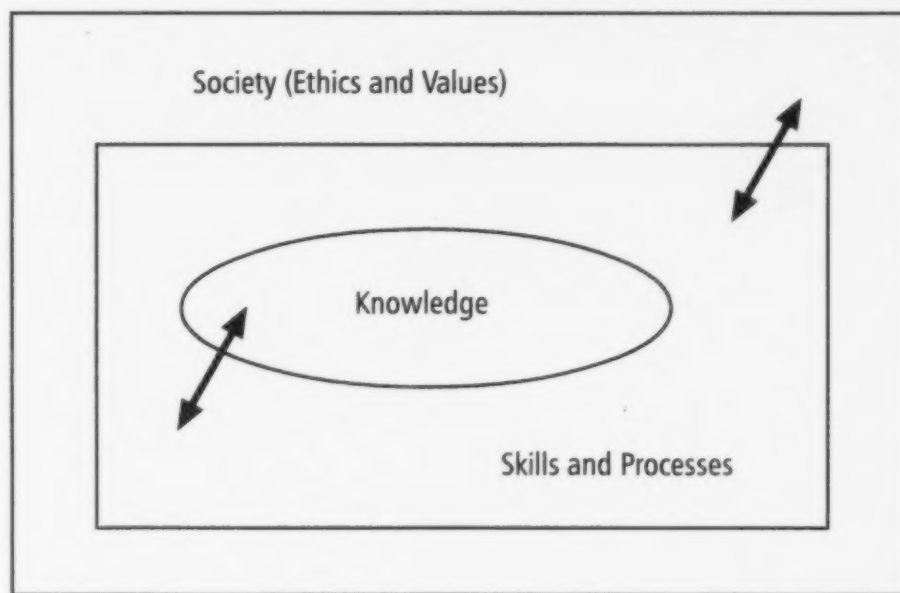


Figure 1

The first gateway is the information gate (lower double arrow). If this is in place and effective, students will be able to access any information they want, when and where they want it, and in the form they need it. In schools, students will be working on numerous projects in areas where the teacher cannot always be the resident expert. Students are going to need independent external information that meets their needs. That information must be easy to access and at a level students can understand.

The second gateway is the social gate (upper double arrow). This gate is about how our attitudes and beliefs develop throughout our lives. These values and attitudes will affect how we view the information we access and how we interpret it. These factors include our relationships with our peers, mentors, families, and friends as well as how we are influenced by the media we are exposed to or choose to interact with. A society's values and ethics impact on how we interpret and process information.

THE INFORMATION GATEWAY

Information access and manipulation requires students to have good communication skills. Without these essential skills, students are more likely to struggle in an increasingly rich information environment. The Internet and access to information through the international and national phone networks hold the promise of being able to fulfill the role of this gateway. This system is based on the telecommunications set of technologies, and our students must be familiar with both how they operate and how to apply and use them.

The amount of information available is doubling every two and a half years, and no teacher would suggest that he or she could meet all of his or her students' information needs. Access to information outside of what the teacher has been able to provide traditionally has been via the school and/or public library, but today we need to look at the wider issues of how we obtain most of the information that we, as adults, require each day.

MANAGING THE INFORMATION

Tools are now being developed to assist teachers and students to find relevant information within this data pool. Two of the most effective tools are the Teachers@work site (<http://teachers.work.co.nz>) and the Needle in a CyberStack site (<http://home.revealed.net/albee/index.html>).

The Teachers@work site provides reviews of more than 2,500 education sites in various curriculum areas. The CyberStack site contains a complete list of the various search engines, the cybrarian's (virtual librarian's) list of top sites for information access, reference sites, museums, news sources, research tools, and curriculum sites as well as other useful information.

Together, these two sites provide teachers with an excellent base for their Internet use.

KEY PROBLEM-SOLVING SKILLS

One of the realizations in this information-rich world is that an essential set of skills will be problem-solving strategies. The skills recognized in problem solving include the following:

- ☐ Thinking critically, creatively, reflectively, and logically.
- ☐ Exercising imagination, initiative, and flexibility.
- ☐ Identifying, describing, and redefining problems and analyzing them from a variety of perspectives.
- ☐ Making connections and establishing relationships.
- ☐ Inquiring, researching, exploring, generating, and developing ideas.
- ☐ Testing ideas and solutions and making decisions on the basis of experience and supporting evidence.
- ☐ Evaluating processes and outcomes.

Many students have already learned many of the elements that make them better problem solvers and, hence, better at coming to terms with new technologies. Combined with risk analysis and risk taking, the following generic process can be applied to any situation where new technologies are encountered.

What Is the Task?	Use questioning to ensure the task is clear.
Plan, Gather	Gather all the information available.
Scan, Sift, Sort	Scan the information looking for material and keywords that you understand and can relate to. Sort the information with the most promising "leads" grouped together.
Analyze	Analyze the content of your best information looking for logical connections.
Synthesize	Draw a schematic representing the interrelationships of the information found.
Reflect	Consider whether you have sufficient information, all the essential keys for success and a broad understanding of what you are trying to achieve.
Keep a Log	Include the origin of each bit of information, including all necessary references.

There has been a general perception that in order to use a particular technology it was imperative that the student actually understood the inner working of the technology he or she was using. This is not always necessary, although in some cases it helps in the problem-solving approach. We do not, however, require people to understand the complexities of how a vacuum cleaner works before we let them actually use it.

In order to understand the problem-solving process, it is important to engage in it. Just as it is important for you to actually problem solve, it is important to let students use their problem-solving skills and not leap in and solve every problem they come across.

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ACTIVITY 5: HIGHER-ORDER THINKING

Purpose: To plan activities targeting specific higher-order thinking skills.

Imagine you are teaching a class on the topic "Energy in Our Community." Complete the table by listing an activity that would accentuate each of the skill groups shown.

SKILLS	ACTIVITY
Thinking critically, creatively, reflectively, and logically	
Making connections and establishing relationships	
Evaluating processes and outcomes	
Scanning, sifting, and sorting of information	

SEMANTIC FIELDS

A semantic field is a set of terms or combinations of terms that provide a possible lead to sites on the World Wide Web dealing with a particular topic. In order to develop a semantic field, it helps to have a brainstorming session with the students and get them to suggest terms that may be useful. Many students are not intrinsically good at thinking of associated terms, so do not be too surprised by some of the terms they think are appropriate!

A possible semantic field for sites about the planet Mars that would be suitable for schoolchildren would include terms such as *planet*, *Mars*, *astronomy*, *NASA*, "*solar system*," "*k-12*," and *Martian*. (The quotation marks around two terms are Boolean operators that indicate these words belong together. This is the only operator we include in the semantic field.)

Words that the students might suggest may include *space*, but *space* would not be a good term as it can mean so many things (e.g., "taking up space," "watch this space").

Brainstorming semantic fields will be necessary to provide the students a comfort zone to practice in, but developing a semantic field often requires prior knowledge that the students do not have so it is unfair to expect them to be able to search for information. An example of this would be the statement "Compare and contrast the superannuation schemes of Australia, New Zealand, the United States, and the United Kingdom."

The semantic field for this is quite difficult because if they use the term *superannuation*, they will only get information on the Australian and New Zealand systems. In the United States, these schemes are known as *retirement plans* and in the United Kingdom, they are known as *pension plans*. The semantic field, therefore, could include the following terms: *retirement*, *pension*, *plan*, *financial planning*, and *superannuation*.

It is the need for prior knowledge that limits students in finding information successfully on the Internet. Having a broad

general knowledge is useful as is knowing how to use a thesaurus, although these are not as useful as you may imagine.

Creating a Search Entry

The next stage is to reduce the semantic field to a search entry that we can enter into the search engine. Selecting terms and the order in which to place them, as well as becoming familiar with how each search engine operates, will take practice. It helps to familiarize oneself with one search engine and get used to how it operates before using multiple search engines.

It also helps to limit the number of terms in the search entry to three or four. If you find you are using the minus sign (or hyphen) several times, your search entry may need changing.



ACTIVITY 6: DEVELOPING SEMANTIC FIELDS

Purpose: To develop effective semantic fields.

1. Consider each of the following topics and brainstorm a list of possible semantic fields.
2. Review the choices and list the semantic field you think would be most useful in searching the Internet.

TOPIC	SEMANTIC FIELD
Exploration of Mars: Is it a good use of public money or a drain on Earth's resources?	
Compare and contrast the architecture of the Maya and the Inca.	
The art of Gauguin and Monet have influenced style and direction of their times. Make a brief comment on the differences between their painting styles.	
Art is more than painting pictures. Art with primary students can be very expressive. What activities could I do with this age to support their free expression?	
Teachers are really starting to use the Internet well in their classrooms.	
I am doing a unit on animal conservation with fourth grade students and want some good links to projects they can get involved with.	
The death penalty should be abolished! What are the pros and cons for this statement?	

BOOLEAN SEARCHING

Boolean searching is the term used to describe how words can be combined to refine a search, or narrow it to provide results that more closely match what you are looking for. Boolean terms, or operators, include *and* (or +), *not* (or -), *or*, *near*, the asterisk (*), and quotation marks (" "). There are additional terms, but these six are the most useful.

And (+) and Not (-)

The two principal operators are *and* (+) and *not* (-). These can be used to get more specific results to a search. For example, to get information on Malaysian festivals, simply placing the two terms into the search engine results in information on sites dealing with festivals from all sorts of countries and all sites associated with Malaysia. What we really wanted was sites with both Malaysia and festivals. So we enter *+Malaysia +festivals*.

After entering this, we find that we get a lot of sites returned dealing with Malaysian sports festivals, which was not what we intended. To remove all the sports-oriented sites, we would enter *+Malaysia +festival -sport*.

Capital Letters

If we enter *Festivals*, we will only get sites that use the word *Festivals* with a capital letter at the start of the word. If we enter *festivals*, then we will get sites with the word *festivals* and the word *Festivals*.

Or and Near

Not all search engines use the *or* and *near* operators, and you will need to check the search details on each search engine's home

page to see whether it accepts these terms. The *or* operator can be very useful. For example, when looking up information on cats and dogs, if we entered *cats and dogs*, we would only get sites with both these terms. If we enter *cats or dogs*, then we would get sites that have either cats or dogs featured and sites that have both featured.

The operator *near* is not used by many engines, but it allows you to find additional sites that might not usually be included in a search. This is helpful when doing obscure searches and you are unsure of the terms that you are using.

Quotation Marks

The use of quotation marks is very helpful in situations in which you know two or more terms are used in a specific order. An example is "British Columbia."

Entering "*British Columbia*" would result in providing sites with these two words in this combination. This is very useful when looking for organizations such as "World Health Organization" or "U.S. Department of Education." When brainstorming a semantic field, having a combination of terms within quotation marks is one of the most powerful ways of getting successful results to a search.

Asterisk

Another useful tool is the asterisk (*), especially if you are not sure of the spelling of a term. Entering *architekt** will provide sites for *architect* and also for words with similar spellings, such as *architecture* and *architectural*. This is especially useful when searching for words that are spelled differently in different countries, such as *color* and *colour*.

Boolean operators can be used in any combination, and with as many terms as you desire. Generally, we would use no more

than four terms. The most critical issue is to choose keywords, and this takes a lot of practice.

Following are examples of possible semantic fields and search fields for various topics.

TOPIC	GRADE LEVEL	SEMANTIC FIELD	SEARCH FIELD
Life in the Arctic Circle	6-10	Animals, polar, birds, ice, cold, snow, "arctic circle", "polar bear", white, k12, life	+ animals + "arctic circle"
Life Cycles of Insects	K-3	insects, pupae, chrysalis, hibernate, "life cycle", butterfly, moth	+ insect + "life cycle"
The Planets	4-8	space, astronomy, planets, universe, orbit, asteroid, "solar system", Jupiter, Mars, Earth, Venus, Pluto, Saturn, Mercury, Uranus	+ planets + "solar system"
Conservation in Amazonia	8-10	conservation, animals, plants, birds, Amazonia, "friends of the earth", Greenpeace, rainforest	+ conservation + amazonia
Learning to Play the Flute	4-8	flute, instrument, tune, "music theory", flautist, k12, "music tuition"	+ flute + "music tuition"
Great Poets of the 18 th Century	10-12	poets, romance, England, "18th century", Keats, Shelley, Byron, poetry, sonnet	+ poetry + "18th century"
Introduction to Geometry	8-9	geometry, math, start, introduction, k12	+ introduction + geometry
Fire Safety in the Home	K-4	fire, safety, house, "fire alarm", "fire engine", fireman, phone, k12	"fire safety" + k12
Visual Literacy in the Classroom	Professional	"visual literacy", k12, "visual elements", image, pictures	+ "visual literacy" + k12
The Industrial Revolution: How It Changed the Life of Workers	9-12	"18th century", "industrial revolution", employees, jobs, "work conditions"	+ "industrial revolution" + workers + "18th century"



ACTIVITY 7: FINDING WHAT YOU WANT

Purpose: To use search tools effectively.

1. Using the search engine Alta Vista (<http://www.altavista.com/>), develop a semantic field and then a search entry for the following topics.
2. Type in each search entry and review the results.
3. Rate your success by deciding how many of the first twenty returns are useful ones.

REQUEST	SEMANTIC FIELD	SEARCH ENTRY	RELEVANT SITES/20
Does Russia wish to enter the EEC by 2005?			
How well do elementary school teachers use computers in classrooms?			
In doing a bachelor of science in engineering at Massachusetts Institute of Technology, what are the required classes for the first year?			
Do plane crashes kill over 10,000 people each year?			
I am teaching a thematic unit on whales. Are there any sites on this that would be of assistance to a sixth grade teacher?			
I want the lyrics to a song to use in a school play, but I know only the first two lines. Can I go to a website that will provide the rest of the words?			

4. Provide a search entry for the following after you have created a semantic field.

REQUEST	SEARCH TERMS
We are studying Romans, but I know there are Roman blinds, sandals, and the Book of Romans in the Bible. What Boolean search terms would I use to get information about Romans that lived in Europe 2,000 years ago?	
I am doing space as a topic but when I search I get information about the spaciousness of the new Saturn car. What terms should I be entering?	
I teach engineering to high school students and want a guide that will assist students in practicing soldering and milling. When I search all I get is flour mills and boring text. Can I get pictures and step-by-step instructions?	
My students went looking on the Internet for information on learning music but all they got are record labels and radio stations. What Boolean terms should they use?	

DIRECTORIES AND SEARCH ENGINES

Directories and search engines not only work differently, but they have different uses. In addition, there are metasearch engines and subdirectories, both of which have their own unique characteristics.

A directory searches through a list of known websites and tries to match a request with what the directory has available. Most directories have material added to them regularly, but, nonetheless, the directory is a reduced set of the Internet. This has some advantages and some disadvantages. If you are looking for thematic topics, a directory can be very useful as the sites are usually arranged in a tree arrangement with similar sites under group headings. There are usually conditions under which sites are added to a directory. For example, the site may hold only children's sites (e.g., Yahoooligans) or garden sites or quality education sites (e.g., Teachers@work).

If you need specific information, a directory is not the place to be looking. Also, a directory review will include more than just the first paragraph from the site, or the meta-tag may not be accurate. Reviews are written by people to include issues of quality, layout, content, and applications. Directory listings on the Internet usually are reviewed individually with the reviews ranging from keywords to one line to full page, complete with ratings and applications.

A search engine constantly adds summaries of Internet websites using software that scans the net for sites or from postings to the search engine from website authors. The end result is that search engines are sifting through keywords and seeing how well they measure up against the data they have accessed from each of the more than seven million sites they have access to. The remarkable thing is the speed at which they do it!

The problem with search engines is that vague searches using poor semantic fields return tens of thousands of sites, most of which will have little relevance to the user's need. Good searches using good semantic fields with good use of the Boolean operators can be remarkably accurate.

A metasearch engine is a search engine that uses the results of many search engines. Rather than searching sites, it searches the results from established search engines.

The fundamental difference between search engines and directories is that directories usually deal with specific topics and the reviews are written by humans. Search engines are software driven and search the entire web. The process is evolving and directories using software are now common.

Following are examples of search engines and directories and their capabilities and foibles.

Yahoo (<http://www.yahoo.com/>)

Yahoo categorizes information according to themes, so if the information you are searching for is thematic, such as "whales" or "mammals," then Yahoo would be a good directory to choose. You move down in a family-tree style, graduating from very general topics to more and more specific ones. Yahoo is assembled by humans and because of this, it shows some human intuition, which makes it a more logical directory. Yahoo has evolved from a search engine to a directory. This is due to the fact that it creates summaries of websites from data supplied by sophisticated software. Yahoo is a highly popular directory.

Excite (<http://www.excite.com/>)

Excite tends to specialize in academic and scientific sites but is a general purpose engine as well. This engine is a concept-based engine and is not word specific, so the engine uses the symbols

“+” and “-” as well as the other Boolean operators. You must place these two symbols directly in front of the word you are using in your search. For example, if you want to holiday in Greece and you want to know where you can play tennis, you may enter *+tennis Greece holiday*.

This will provide you with holiday destinations that definitely provide tennis as an option, but they may not all be in Greece and some may be places where they serve Greek food or hold Greek festivals. If you are definite about Greece, you would enter *+tennis +Greece holiday*. If you want to avoid being near a beach, you would then add *+tennis +Greece holiday -beach*.

By using the Boolean operators, you override the concept searching that Excite carries out, and the normal Boolean search rules apply.

Alta Vista (<http://www.altavista.digital.com/>)

This engine claims to search the largest database of URLs and web page introductions. This can be a blessing in some instances and a curse in others. Alta Vista is quite good for beginners as it can actually interpret naturally written questions such as “What is the weather like in Sydney today?” but be prepared for some odd returns. This search engine is good for obscure searches or those for which you want large numbers of returns.

Alta Vista uses the “+” and “-” operators, so be aware of the rules that go with using them. Alta Vista also has the additional operator “*,” which broadens a search such as “car” to include cartoon, carriage, carrot, and other similar words. Alta Vista also accepts the Boolean operators.

Dogpile (<http://www.dogpile.com/>)

This is an example of a metasearch engine. A metasearch engine searches multiple search engines to get results. Dogpile is a

super metasearch engine as it searches the top sixteen search engines, Usenet services, FTP, and three top news wire services.

The search engine uses Boolean operators. If you do not enter any Boolean operators, it assumes you mean + (or *and*). You must use capitals for the operators. Metasearch engines are great for teachers who have a good handle on Boolean operators and have a very specific request, such as Magellan's second voyage or the atmospheric pressure on Jupiter.

Ask Jeeves for Kids (<http://www.ajkids.com/>)

This is a natural language search engine. You can ask questions such as "Do all animals have a heart?" and it will clarify your request by asking additional questions and then provide you with a list of sites that will assist in proving the answer to your question or query. You need to be a bit careful with natural language search engines as they can misinterpret your question and sometimes make inappropriate suggestions. Ask Jeeves for Kids does not do this.

HotBot (<http://www.hotbot.com/>)

This has become one of the largest search engines and has developed some very clever software to filter out the responses to your requests. For this reason, this engine is very good at specific searches such as "world coffee price changes 1997." If the topic is broad, you will still get a lot of responses, but this engine shines more and more as your topic becomes narrower. HotBot also provides choices so that you or your students may not have to use the Boolean operators and can still get good results.

Yahooligans (<http://www.yahooligans.com/>)

This is a subdirectory of the Yahoo directory that lists sites suitable to the 15-and-under age bracket. The site is great for students and teachers when searching for general themes. Do not use it for specific searches. It was not designed for this approach.

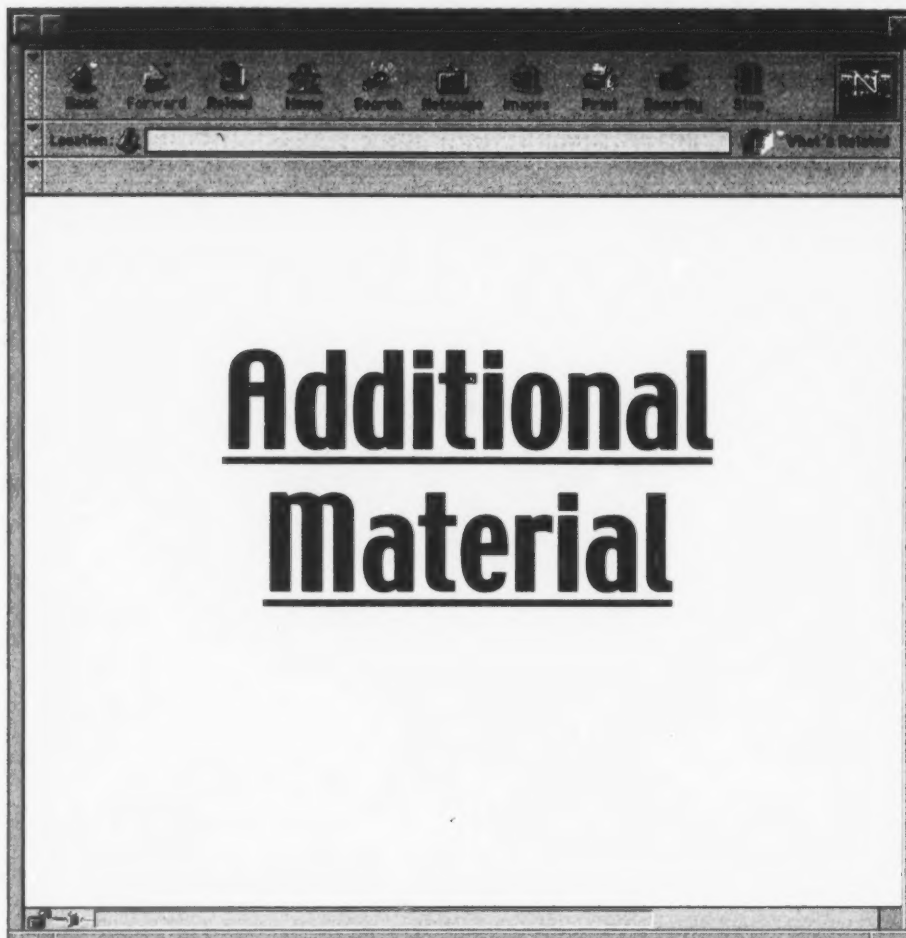
OVERVIEW OF USEFUL SEARCH ENGINES AND DIRECTORIES	
Yahoo (themes)	http://www.yahoo.com/
Excite (science/math)	http://www.excite.com/
Alta Vista (general)	http://www.altavista.digital.com/
Dogpile (general)	http://www.dogpile.com/
Ask Jeeves for Kids (natural language)	http://www.ajkids.com/
HotBot (specific)	http://www.hotbot.com/
Yahooligans (K-12 sites only)	http://www.yahooligans.com/

NOW WHERE WAS I AND WHERE DID THIS SITE COME FROM?

Often we find information and then we forget how we got there. It helps to save your really good sites in your bookmark system, but when you forget, one way is to type into the location bar of Netscape the term *about:global* and press enter.

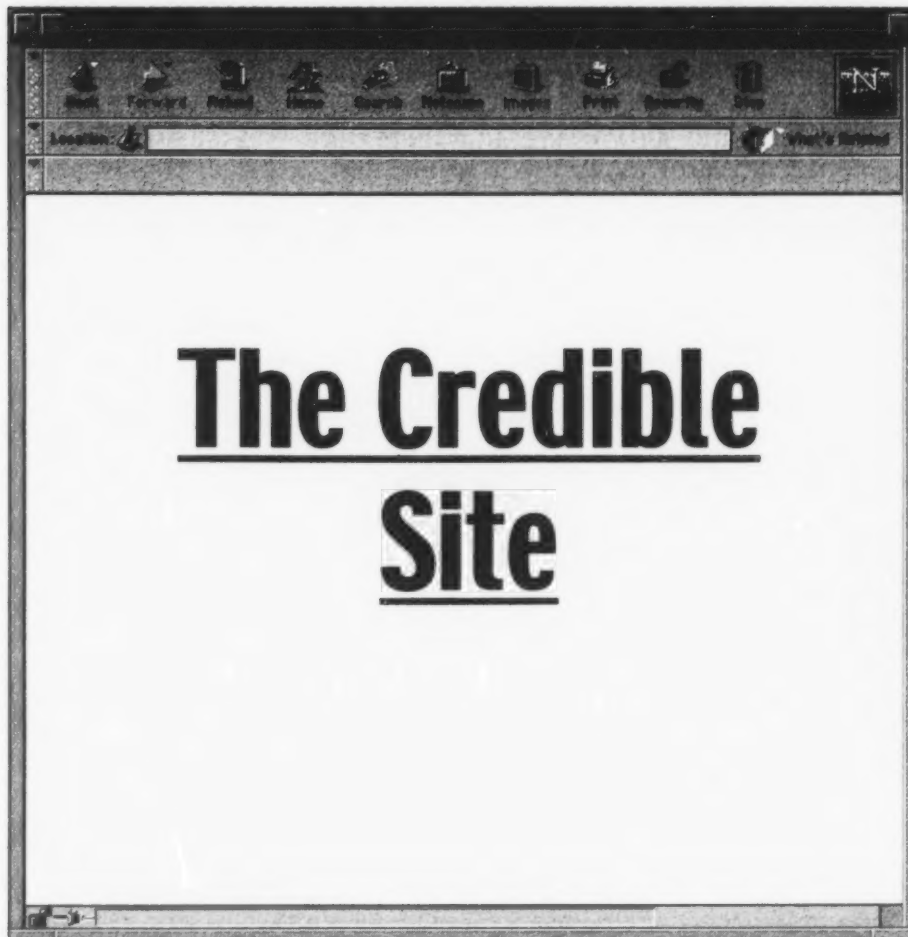
This will provide you with a list of all the sites you have visited for the last three months or so depending on the size of your history or cache file. Deleting the cache in the normal way does not delete this file completely, and so this is also a good way to check up on what the students have been up to while you were not looking!

For Internet Explorer, you will need to go to the directory of the files held on your computer and then select the operating system files (Windows or Mac OS). From there, select the history folder and double click on it. This will provide a history of which websites you have visited and when.



If you want a complete guide to searching on the Internet, then the place to look is on the Internet. Scott Nicholson has put together an excellent tutorial about searching the Internet. It introduces the various search tools as well as how they work and which ones suit which task. He is a very amenable sort of person, and if you ask permission, he may well let you use his material with your class as an introduction to searching the Internet. His material comes complete with a test at the end. He also offers another service called Great Scott. This is a service where you

provide information about what you are searching for and Great Scott helps you select the most appropriate search engine to meet your needs. His website, Ask Scott, can be found at <<http://www.askscott.com/>>.



To judge a site's credibility, you need to consider a number of factors that contribute to its usefulness within the teaching environment. Now that we are teaching our students to discriminate between good sites and sites that are not to be trusted, we need to provide them with criteria on which to base their evaluations. Here is a list of criteria that can be used to evaluate a site.

- ☐ The site is authorized and has credibility. A credible site will have an organization or educational basis behind its

content. This often will appear in the form of a link to that organization or a biographical page.

- ☐ Citing of information. When statistics are quoted, all information is cited with reference to the original location of the information and how to find it.
- ☐ Interactivity. The site allows for a response either via forms or via e-mail. The site responds to requests and acknowledges your sending of information.
- ☐ The site has an emphasis on information, not on flashy applets that have no use or obvious application.
- ☐ The site is updated regularly. Check the site for the last update date.
- ☐ There are links to additional information. One site rarely can do justice to a particular topic. Good sites always refer their viewers to additional sites that can provide specific information.
- ☐ The site can be navigated easily. It should be obvious what to click on and how to return to where you started. Indexes on the left-hand side of the page are a good tool.
- ☐ The site is searchable if it is large, and there is an index to the contents of the site. Searches of directories are theme based and not Boolean based as those used for a search engine.
- ☐ The objective of the site is obvious and stated in the introduction to the site. This should then be revealed via the presented content. Often the objective is not realized via the content.
- ☐ There is a correlation with curriculum. The material should be related to curriculum objectives and relate to your country's educational objectives.

- ☐ There is no racial, religious, or gender imbalances or offensive language contained within the site. Before recommending a site, you must take into account the ethics and morals you wish to establish within your educational community.
- ☐ The level of language on the site is appropriate, and the font size suits the needs of the intended readers. This also applies to the interplay between text and graphical, video, and audio files.
- ☐ Simplicity in layout is one of the best guides for quality of content.
- ☐ The tasks set allows for the various learning styles of individuals. Each site will have its focus, but a balance of styles is the overall aim.
- ☐ There is a variety in the types of activities suggested or provided, including independent, teachers, and/or peer-dependent and team-dependent activities as well as a variety of kinesthetic approaches.
- ☐ Sites encourage students to be creative, use their imaginations, and make use of problem-solving strategies to develop an understanding of the provided material.
- ☐ Project-based sites provide a project management process for both teachers and students to follow, including developmental objectives, timelines and time frames, and development strategies.
- ☐ There is backup information where ethical and moral statements are made, and there is opportunity for students to investigate alternative points of view via referenced links or additional resources.
- ☐ The questioning strategy includes higher-order thinking skills such as synthesis and evaluation of information,

application, and analysis of data and presented points of view or information.

- ☐ The opportunity should exist to share what the student has learned with his or her peers via electronic lists or newsgroups.
- ☐ The site provides a process such that the information can be processed into knowledge. This may be done through sound questioning techniques, use of visual and audio support, and investigative inquiries.
- ☐ The site clearly states what level of ability it is aimed at and the areas it covers.
- ☐ If a plug-in application, a link is provided to obtain it.
- ☐ If responses are accepted via the site, they are reviewed by the site coordinator before being placed on the site. All lists or newsgroups are moderated.

Educational Sites

ART & THE ARTS

INFORMATION: THEMATIC APPROACH

Kinder Art

<http://www.kinderart.com/>

INFORMATION: ENCYCLOPEDIC

The Louvre

<http://www.paris.org/Musees/Louvre/>

INFORMATION: CURRICULUM SUPPORT

Eyes on Art: Teacher's Guide

[http://www.kn.pacbell.com/wired/art/
teach.guide.html#links](http://www.kn.pacbell.com/wired/art/teach.guide.html#links)

INFORMATION: ACTIVITY BASED

Emmett Scott's Arts & Activities

<http://www.cartooncorner.com/artspage.html>

LEARNING CENTERS

Inside Art

<http://www.eduweb.com/insideart/>

COLLABORATIVE PROJECTS

Sanford's ArtEdventures

<http://www.sanford-artedventures.com/>

NEWS/MAGAZINES

Net Eye: Digital Art

<http://www.yea.gnet.pl/neteye/start.html>

ART & THE ARTS

TUTORIAL MATERIAL

Eyes on Art

<http://www.kn.pacbell.com/wired/art2/>

UNITS OF WORK

The Case of Grandpa's Painting

<http://www.eduweb.com/pintura/>

SIMULATIONS

The Sistine Chapel

<http://www.christusrex.org/www1/sistine/0-Tour.html>

LISTS OF SITES

World Wide Art Resources

<http://wwar.com/default.html>

PROFESSIONAL UPSKILLING

The Art Teacher Connection

<http://www.primenet.com/~arted/>

EDUCATIONAL RESEARCH

Getty: Art History

<http://www.gii.getty.edu/>

LANGUAGE ARTS

INFORMATION: THEMATIC APPROACH

My Hero

<http://www.myhero.com/home.asp>

INFORMATION: ENCYCLOPEDIA

Wordsmyth English Dictionary-Thesaurus

<http://www.lightlink.com/bobp/wedt/>

INFORMATION: CURRICULUM SUPPORT

Thematics Units for Primary Grades

<http://www.libsci.sc.edu/miller/unitlink.htm>

INFORMATION: ACTIVITY BASED

Grammar Safari

<http://deil.lang.uiuc.edu/web.pages/grammarsafari.html>

LEARNING CENTERS

The Fun Challenging Mystery Website

<http://www.TheCase.com/>

COLLABORATIVE PROJECTS

CRAYON: Create Your Own Newspaper

<http://crayon.net/>

NEWS/MAGAZINES

Children's Express

<http://www.ceindy.org/>

LANGUAGE ARTS

TUTORIAL MATERIAL

Speeches.com

<http://speeches.com/open.asp>

UNITS OF WORK

The Hero's Journey

<http://www.mcli.dist.maricopa.edu/smc/journey/>

SIMULATIONS

The Motion Picture Industry

<http://library.advanced.org/10015>

LISTS OF SITES

The English Server

<http://eserver.org/>

PROFESSIONAL UPSKILLING

The English Teachers' Web Site

<http://www.mlc.vic.edu.au/english/>

EDUCATIONAL RESEARCH

Key Concepts of Media Literacy

<http://www.screen.com/mnet/eng/med/bigpict/8keycon.htm>

HEALTH & PHYSICAL EDUCATION

INFORMATION: THEMATIC APPROACH

Life Education Network

<http://www.lec.org/>

INFORMATION: ENCYCLOPEDIA

Chronic Ill Net

<http://www.calypte.com>

INFORMATION: CURRICULUM SUPPORT

PE & Health Listservs

<http://educ.ubc.ca/dept/cust/pe/ListServes.html>

INFORMATION: ACTIVITY BASED

Lifestyle Cancer Information

<http://www.wce.ac.nz/cancer/>

LEARNING CENTERS

BioRap

<http://www.biorap.org/br8contents.html>

COLLABORATIVE PROJECTS

Who Cares

<http://www.whocares.org/>

NEWS/MAGAZINES

Sports Illustrated for Kids

<http://www.sikids.com/>

HEALTH & PHYSICAL EDUCATION

TUTORIAL MATERIAL

Dole 5-a-Day

<http://www.dole5aday.com/>

UNITS OF WORK

Lifestyle In the Sun

<http://www.wce.ac.nz/sun/sunsmart.html>

SIMULATIONS

Shape Up America

<http://www.shapeup.org/sua>

LISTS OF SITES

LifeLines @ Work

<http://www.lifelines.com/cgi-bin/cgiwrap/~lifeline/mainpage.pl>

PROFESSIONAL UPSKILLING

Expect the Best from a Girl

<http://www.academic.org/>

EDUCATIONAL RESEARCH

PE Central

<http://pe.central.vt.edu/>

INFORMATION TECHNOLOGY

INFORMATION: THEMATIC APPROACH

Homestead

<http://www.homestead.com/>

INFORMATION: ENCYCLOPEDIA

The Amazing Picture Machine

<http://www.ncrtec.org/picture.htm>

INFORMATION: CURRICULUM SUPPORT

What Is? Com

<http://www.whatis.com/>

INFORMATION: ACTIVITY BASED

Revenge of the Lunar Fringe

<http://www.headbone.com/derby/fringe>

LEARNING CENTERS

Learn the Net

<http://www.learnthenet.com/english/index.html>

COLLABORATIVE PROJECTS

www.electronic-school.com

<http://www.electronic-school.com/>

NEWS/MAGAZINES

From Now On

<http://fromnowon.org/>

INFORMATION TECHNOLOGY

TUTORIAL MATERIAL

Finding Data on the Internet

<http://nilesonline.com/data/>

UNITS OF WORK

Escape to Freedom

<http://www.headbone.com/derby/>

SIMULATIONS

CU-SeeMe Schools

<http://www.gsn.org/cu/index.html>

LISTS OF SITES

CNET: Downloads

<http://www.download.com/>

PROFESSIONAL UPSKILLING

Computers in the Primary Classroom

<http://www.peg.apc.org/~dmorgan/index.html>

EDUCATIONAL RESEARCH

The Technology Source

<http://www.horizon.unc.edu/TS/>

FOREIGN LANGUAGES

INFORMATION: THEMATIC APPROACH

Foreign Language for Travellers

<http://www.travlang.com/languages/>

INFORMATION: ENCYCLOPEDIA

Yamada Language Guides

<http://babel.uoregon.edu/yamada/guides.html>

INFORMATION: CURRICULUM SUPPORT

Japanese Online

<http://www.japanese-online.com/>

INFORMATION: ACTIVITY BASED

Mama's "Let's Learn to Speak Italian"

<http://www.eat.com/learn-italian/index.html>

LEARNING CENTERS

The UCLA Language Materials Project

<http://www.lmp.ucla.edu/>

COLLABORATIVE PROJECTS

Intercultural E-Mail Classroom Connections

<http://www.iecc.org/>

NEWS/MAGAZINES

English as a Foreign Language Magazine

<http://www.u-net.com/eflweb/>

FOREIGN LANGUAGES

TUTORIAL MATERIAL

Chinese Multimedia Tutorial

<http://www.inform.umd.edu/EdRes/Topic/Humanities/C-tut/C-tut.html>

UNITS OF WORK

Learn to Speak Italian with Professore Antonlol

<http://www.eat.com/learn-italian/index.html>

LISTS OF SITES

The Latin American Network Information Center

<http://lanic.utexas.edu/>

PROFESSIONAL UPSKILLING

Language Connect

<http://www.syrlang.com/home.htm>

EDUCATIONAL RESEARCH

Cooperative Learning in Modern Languages

<http://www.geocities.com/Paris/LeftBank/3852/cooplearn.html>

MATHEMATICS

INFORMATION: THEMATIC APPROACH

Hotel Infinity

<http://www.c3.lanl.gov/mega-math/>

INFORMATION: ENCYCLOPEDIA

Assessment Resource Banks in Math

<http://arb.nzcer.org.nz/nzcer3/nzcer.htm>

INFORMATION: CURRICULUM SUPPORT

Girl TECH Lesson Plans

<http://www.crpc.rice.edu/CRPC/Women/GirlTECH/Lessons/>

INFORMATION: ACTIVITY BASED

Fresh Baked Fractions

<http://www.funbrain.com/fract/index.html>

LEARNING CENTERS

Probability and Spooky Coincidences

<http://ourworld.compuserve.com/homepages/rajm>

COLLABORATIVE PROJECTS

Mathematics Projects

<http://www.eduplace.com/projects/mathproj.html>

NEWS/MAGAZINES

Mathematics Teacher

<http://www.nctm.org/mt/mt.htm>

MATHEMATICS

TUTORIAL MATERIAL

Arithmetic Without Embarrassment

<http://www.resnetwm.edu/~sscra/>

UNITS OF WORK

Mathematics Activities Guides

<http://cesme.utm.edu/resources/math/MAG/MAG.html>

SIMULATIONS

Calculators On-Line Center

<http://www-sci.lib.uci.edu/~martindale/>

[RefCalculators.html](#)

LISTS OF SITES

WWW Virtual Library

<http://euclid.math.fsu.edu/Science/math.html>

PROFESSIONAL UPSKILLING

Math Teacher Link

<http://MTL.math.uiuc.edu/>

EDUCATIONAL RESEARCH

The Dr. Data Quiz

<http://www.un.org/Pubs/CyberSchoolBus/special/drdata/>

PERFORMANCE ARTS

INFORMATION: THEMATIC APPROACH

Classical Composers

<http://www.stemnet.nf.ca/CITE/composer.htm>

INFORMATION: ENCYCLOPEDIC

The Mozart Project

<http://www.frontiernet.net/~sboerner/mozart/>

INFORMATION: CURRICULUM SUPPORT

Music Education at www.gspyo.com

<http://www.gspyo.com/education/>

INFORMATION: ACTIVITY BASED

Music Education Online

<http://www.geocities.com/Athens/2405/index.html>

LEARNING CENTERS

Cyber Film School

<http://www.cyberfilmschool.com/>

COLLABORATIVE PROJECTS

Young Playwrights

<http://www.gettingreal.com/tools/ypi/index.html>

NEWS/MAGAZINES

Rolling Stone

<http://RollingStone.com/sections/magazine/text/default.asp?afl=>

PERFORMANCE ARTS

TUTORIAL MATERIAL

Learning Musical Elements Through Listening

<http://lrs.ed.uiuc.edu/students/yyang/HTML/prj.html>

UNITS OF WORK

Music Learning Packets

<http://www.u.arizona.edu/~tirwin/lap.html>

SIMULATIONS

KidsOp: The Children's Opera Project

<http://www.kidsop.com/>

LISTS OF SITES

Dance Links

<http://www.dancer.com/dance-links/>

PROFESSIONAL UPSKILLING

Film and Television Studies

<http://eserver.org/filmtv/>

EDUCATIONAL RESEARCH

The International Theatre Design Archive

<http://www.siue.edu/PROJECT2000/>

SCIENCE

INFORMATION: THEMATIC APPROACH

Seeds of Life

<http://versicolores.ca/seedssoflife/ehome.html>

INFORMATION: ENCYCLOPEDIA

Chem4kids

<http://www.kapili.com/chem4kids/index.html>

INFORMATION: CURRICULUM SUPPORT

Thinking Fountain

<http://www.smm.org/sln/>

INFORMATION: ACTIVITY BASED

Learning Through Collaborative Visualization (CoVis)

<http://www.covis.nyu.edu/>

LEARNING CENTERS

El Nino: Hot Air over Hot Water

<http://www.fi.edu/weather/nino/nino.html>

COLLABORATIVE PROJECTS

The Endangered Animals of the World

<http://www.tenon.vuurwerk.nl/>

NEWS/MAGAZINES

New Scientist

<http://www.newscientist.com/>

SCIENCE

TUTORIAL MATERIAL

The Visible Embryo

<http://www.visembryo.com/>

UNITS OF WORK

Worm World

<http://www.nj.com/yucky/worm/>

SIMULATIONS

The Virtual Microscope

<http://met.open.ac.uk/vms/vms.html>

LISTS OF SITES

Amazing Environmental Organization WebDirectory

<http://webdirectory.com>

PROFESSIONAL UPSKILLING

Integrating the Internet Into the Science Classroom

<http://kendaco.telebyte.com:80/billband/Possibilities.html>

EDUCATIONAL RESEARCH

Assessment Resource Banks in Science

<http://arb.nzcer.org.nz/nzcer3/nzcer.htm>

SOCIAL STUDIES

INFORMATION: THEMATIC APPROACH

Amnesty International

<http://www.amnesty.org/>

INFORMATION: ENCYCLOPEDIC

The Encyclopedia Mythica

<http://www.pantheon.org/mythica/>

INFORMATION: CURRICULUM SUPPORT

This Day In History

<http://www.historychannel.com/today/>

INFORMATION: ACTIVITY BASED

EcoSim

<http://ecedweb.unomaha.edu/ecosim.htm>

LEARNING CENTERS

Collaborative Unit on Ancient Egypt

<http://www.libsci.sc.edu/miller/Egypt.htm>

COLLABORATIVE PROJECTS

TerraQuest: Virtual Galapagos

<http://www.terraquest.com/galapagos/intro.html>

NEWS/MAGAZINES

CNN Homepage

<http://www.cnn.com/>

SOCIAL STUDIES

TUTORIAL MATERIAL

Think: Opinions, Ideas and Commentary

<http://www.trigger.net/~think/>

UNITS OF WORK

EyeWitness

<http://www.ibiscom.com/index.html>

SIMULATIONS

The Rivertown Simulation

<http://www.emich.edu/public/geo/rtownintro.html>

LISTS OF SITES

Ancient World Web

<http://www.julen.net/aw/>

PROFESSIONAL UPSKILLING

Sustainable Business Network

<http://sbn.envirolink.org/>

EDUCATIONAL RESEARCH

National Council for Social Studies Online

<http://www.ncss.org/home.html>

TECHNOLOGY EDUCATION

INFORMATION: THEMATIC APPROACH

The American Experience: WayBack

<http://www.pbs.org/wgbh/pages/amex/kids/tech1900/feature.html>

INFORMATION: ENCYCLOPEDIA

Access Excellence

<http://www.gene.com/ae/>

INFORMATION: CURRICULUM SUPPORT

Planet Innovation

<http://planet.rtec.org/menu.html>

INFORMATION: ACTIVITY BASED

Imagine Nation

<http://www.ImagineNation.com/>

LEARNING CENTERS

How Stuff Works

<http://www.howstuffworks.com/index.htm>

COLLABORATIVE PROJECTS

DeLuca's TechnoSchool

<http://courses.ncsu.edu/classes/ted430/intro.htm>

NEWS/MAGAZINES

Roman Technology Handbook

http://www.unc.edu/courses/rometech/public/content/art_handbook.html

TECHNOLOGY EDUCATION

TUTORIAL MATERIAL

Online Courseware

<http://www1.needs.org/database/online.html>

UNITS OF WORK

Women Inventors

<http://www.si.edu/lemelson/Wmvent.htm>

SIMULATIONS

Hershey Food Corporation

<http://www.hersheys.com/>

LISTS OF SITES

Scotty's Surflin' Shack

<http://www.igs.net/~mascott/>

PROFESSIONAL UPSKILLING

The Technology Education Lab

<http://www.techedlab.com/main.html>

EDUCATIONAL RESEARCH

Vermont Technology Education Association

<http://www.cit.state.vt.us/educ/vtea/>

ADDITIONAL WEBSITES

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REFERENCE

U.S. Teens and Technology: Gallup Poll/Executive Summary.
National Science & Technology Week Online. <[http://
www.nsf.gov/od/lpa/nstw/teenov.htm](http://www.nsf.gov/od/lpa/nstw/teenov.htm)>. February 11, 1999.

There are
one-story intellects,
two-story intellects, and three-story
intellects with skylights. All fact collectors, who
have no aim beyond their facts, are one-story men. Two-story men
compare, reason, generalize, using the labors of the fact collectors as
well as their own. Three-story men idealize, imagine,
predict—their best illumination comes from
above, through the skylight.

—*Oliver Wendell*

Holmes





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Educator's Guide to Searching

Become familiar with new technology and surf the Net with confidence and ease! *Educator's Guide to Searching the Internet* helps you learn to use the technology of the Internet to its full potential in your classroom.

Author Mark Treadwell provides readers with a thorough discussion of the relevance of technology to education, numerous tips for finding information on the Internet, and an extensive list of websites for several curricular areas. Readers can use the web-based activities as a tutorial and complete them at their own pace. When they are finished they have a ready reference guide of search strategies and relevant websites.

Educator's Guide to Searching the Internet offers many tips and strategies for learning about and searching the Internet.



Mark Treadwell

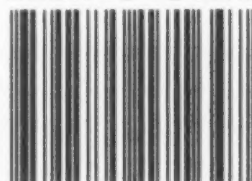
Mark is an educational consultant specializing in new technology curriculums. Mark has conducted numerous technology-based workshops and conferences for educators in New Zealand and has published a number of works on the subject of technology for educators. His recent publications include *1001 of the Best Internet Sites for Educators*, *Innovation & Ingenuity: Interpreting the Technology Curriculum in New Zealand*, *Searching the Web*, and *Introduction to Astrophysics*.

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ISBN 1-57517-164-3



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